

The

# PLANESMAN



'WE'RE ALL BEHIND THE BOYS BEHIND THE BOMBS'



TEN THOUSAND DOLLARS and a 35% INCREASE IN PRODUCTION. That's what happened when George Victor Baxandall, over No. 4 way, figured out an effective re-arrangement to smash the bottleneck caused when cleaning engine parts. He submitted his proposal through the Employees' Production Committee. Result: one of the most important suggestions yet made by a worker in the Canadian aircraft industry! Shown at left are W. Leigh Brintnell, President, handing \$500 in Victory Bonds, maximum award under the plan, to George, and Alex. Cunningham, Engine Shop Supervisor, his "boss."







## AIRCRAFT REPAIR LIMITED

Box 517, Edmonton, Alta.

"International Overhauled"

under contract to  
British Commonwealth  
Air Training Plan

W. LEIGH BRINTNELL, President  
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G. C. CHRISTIE, Chief Engineer  
J. MOAR, Planning and Production  
A. CUNNINGHAM, Engine Shop Supervisor  
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B. BRIGGS, Cleaning and Sandblasting  
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J. McNAUGHTON, Radiators  
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H. DEA, Building Maintenance  
C. LUKE, Equipment Maintenance  
F. TAPPENDON  
B. JONES  
R. PROCTOR  
J. RUTTER, Appendix "C" and Write-Offs  
A. MAGRATH, Work and Parts Scheduling  
J. SKELTON, Security  
F. LITTLE, Mobile Field Unit  
R. R. ANDERSON, Purchasing  
F. VILLEUX, Tools and Equipment  
W. FLETCHER, Stock Control  
I. F. DAVIS, Work Crew  
H. BOWEN, Assistant Chief Inspector  
L. BELANGER, Repair Miscellaneous Aircraft  
G. FORSTER, Office Equipment and Supplies  
S. WHITE, Paymaster  
R. FRIEND, L. SHERRIS, Assembly Floor  
L. SEAGAR, R. MILLER, Welding

FORMER EMPLOYEES OF MACKENZIE AIR  
SERVICE LTD. NOW IN THE ARMED FORCES

W/C STANLEY R. MACMILLAN, Dartmouth, N.S.  
S/L ARCHIE VAN HEE, Dartmouth, N.S.  
W/C DON FERRIS, England  
S/L I. INNIS-TAYLOR, Victoria, B.C.

Attractive badges, as pictured here, have been designed to identify those persons who are engaged in Canada's wartime Aircraft Industry. These are available only to employees who have been engaged in the industry for at least three months. It gives recognition to the importance of the work being done. They can be obtained at the Personnel Office.



## BORROWED GOODS

### "IF YOU MUST CRAB . . .

How to do the things you do not like to do and like it is the problem facing all of us. None of us like restrictions. It is quite possible, however, that we are willingly subject to mental exaggeration. Haven't we always been living under restrictions, even in the most normal times? Exceeding the old 50 mile speed limit brought us a summons—a boisterous outburst on our main street might have landed us in the "cooler". Again, just one more round and we would have been escorted in a direction we did not want to go. We always had to work, and who ever did feel like working all the time—we had to pay our bills—we had to associate with people we did not like—everybody always did have a boss who could stand a mountain of improvement. The Government always did things we didn't like and never did the things we did like. Yes, we always crabbled.

As the war progressed, things tightened up—more restrictions—priorities—rations—reductions of items that we think we want or need badly. Yet we seem to be in better health than ever before. We have more employment than we have had for a long time. In the aggregate we have more money in our pockets and savings than we have had for many years, or perhaps ever before, and the sphere of activity is still so large that we cannot exhaust its ramifications. We begin to learn that we are guided by intelligent direction, which is benefitting us both as individuals, and, collectively, as a nation.

Let's do some more crabbing because we haven't as much to crab about as the unfortunates in Europe! Or should we be grateful because we have no scorched earth, famine, concentration camps or firing squads? It's a free country—that's why the Gestapo can't prevent us from either crabbing or glorifying.

Which shall it be? Which is in keeping with this grand and glorious Dominion?"

O. F. Danneker.

## SHIRT TALES

Forsyth Athletic Association,  
John Forsyth Ltd., Kitchener, Ont.

**The PLANESMAN**

Published Monthly By and For the Employees of  
AIRCRAFT REPAIR LIMITED

Cartoons by  
*Alfred McNeely* *B. Lewan*

Photos by  
*Edith Jones* *Joan A. Hart*

Arranged by Special Service  
with  
*Murphy Peters*

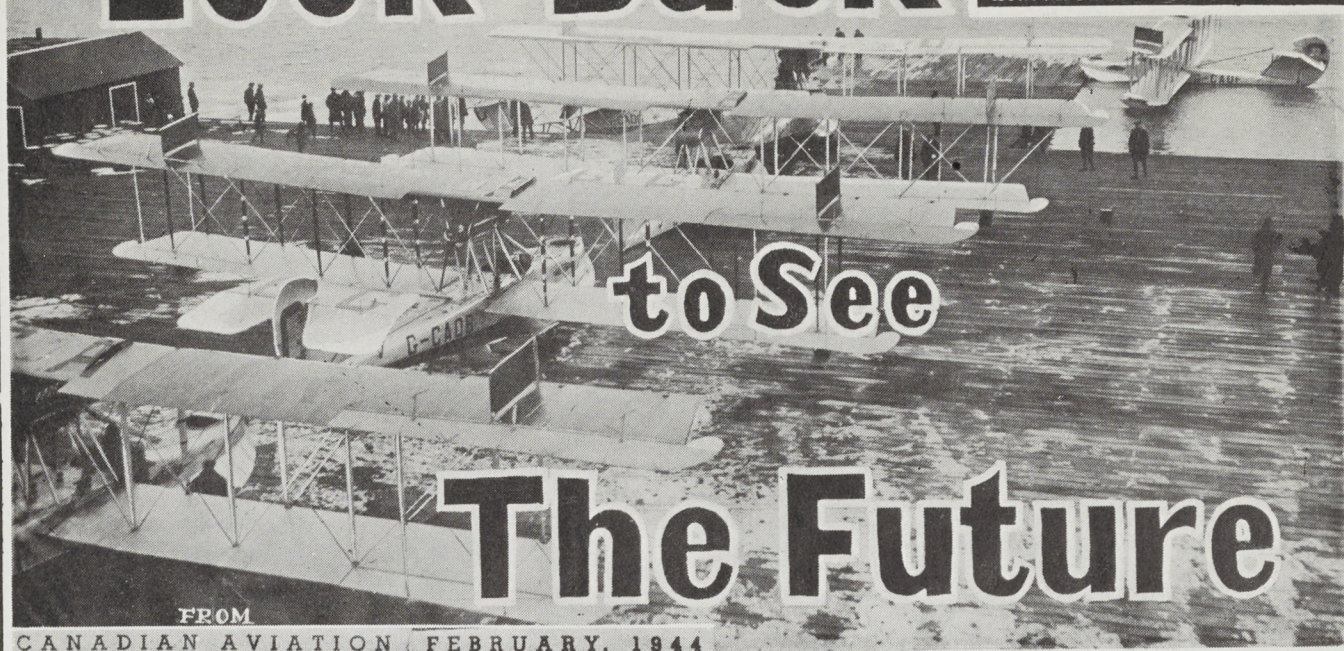
*Feb 'Are YOU happy at YOUR work? Tolerance*

VOL. 2, No. 6

MARCH, 1944



# Look Back



CANADA was one of the first countries to use air freighters, because of the vast areas of unsettled country where the only existing means of transportation was either by canoe in the summer or by dogteam in the winter.

The first attempt to use air freighters was carried out in 1921 when Imperial Oil Limited bought three Junkers F13's and flew men and supplies from Edmonton, Alberta, to the new oil fields at Fort Norman, N.W.T. The operation was not carried on as the airplanes were not winterized and pilots did not know the ground conditions.

In 1924, prior to any organized commercial air transportation, the Government of the Province of Ontario commenced an air service in connection with forestry work in the northern part of the province. Since it was entirely a seaplane operation, and in view of the fact that almost one third of the country was composed of lakes and rivers, flying boats were used of the Curtiss HS2L type.

These boats, pictured above at Sault Ste. Marie, Ont., were powered by the

Liberty engine, or I should say—underpowered — as the aircraft with a licensed load had difficulty in becoming air-borne, and once in the air it was unusual to throttle the motor more than 50 revolutions per minute.

In spite of the lack of performance a tremendous amount of useful work was done. Every portion of northern Ontario was patrolled each day. If a fire was spotted and it happened to be in accessible country, the locations were sent in to the nearest forestry base by radio and parties dispatched to put out the fire. If the fire was not accessible to ground transportation, then fire fighters, pumps, hose, equipment and supplies were flown in to the lake or river nearest the fire.

If the fires were reported when they were just starting, then the suppression of them was a comparatively easy matter. However, if they had a good start great quantities of supplies and large numbers of men had to be transported in to the scene of action. After the fire had been successfully put out, men and equipment had to be flown back to the various bases again.

This was my first experience in con-

nection with freighting by air. This organization is still carrying on its work. As a result of this type of detection and suppression of fires, millions of dollars worth of valuable timber has been saved by the Province of Ontario.

According to their figures, the cost, even with inadequate flying equipment, was very low in comparison to the benefits gained, and I might say that as a result the Province of Ontario has one of the most efficient Forestry Departments in the world.

I FLEW with this forestry organization from 1924 to January, 1927, when the first commercial air line in Canada was formed. In the late fall of 1926 a gold strike had been made at a place called Red Lake in northern Ontario. This was only 120 miles from the railroad but it took three to four days to reach there by boat.

These gold discoveries appeared to be important, and in view of the proximity to the water, the forestry planes were requested to provide transportation in and out of the area by mining men. Thus, the reason for the formation of the first commercial air line became apparent.

## Canada's Role in Air Freighting

By W. LEIGH BRINTNELL, President, Aircraft Repair, Ltd.

From a Paper Delivered to the Society of Automotive Engineers



# The PLANESMAN

AIRCRAFT REPAIR LTD. EDMONTON ALBERTA CANADA

I was the second pilot to join Western Canada Airways Limited, and in view of the airfreighter experience on forestry work, we already had some pre-conceived ideas as to the type of aircraft we should buy to serve this and other mining areas both winter and summer.

The old bi-planes in use with the forestry service were difficult to handle around docks and therefore high-wing monoplanes, convertible to pontoons and skis seemed to be the logical choice. The Fokker Aircraft Corporation of New York designed the Fokker Universal, and at that time it had a good performance. We decided to buy three of these aircraft to start the service.

They proved to have a good performance on both floats and skis and

of course they were much faster than the older types which had been used, with the result that this service tremendously stimulated mining in the Red Lake District. Prospectors could fly in to favorable formations with sufficient supplies to last them several weeks. They would then arrange with one of our pilots for additional provisions or to be brought out at some subsequent date.

This increased accessibility between the railway and Red Lake stimulated additional prospecting, and as a result the Red Lake area became the most active and important new mining area at that time. The camp is still one of the most important gold mining camps in Canada, and incidentally it is still being served by air transportation.

There is a boat service in the summer which is adequate to carry in all of the heavy mining machinery and supplies. The transportation of all personnel is made by air. This cost does not militate against the economic development of mining either in this or any other area in Canada.

ONE mining company found that flying all of their miners in to the camp had a beneficial effect on morale, as the miners felt they could get out again in an hour whenever they wished, and therefore they were more content to remain on the job for longer periods. When they went in by boat the trip took four days and as soon as the men arrived they began to think about going out again.

Western Canada Airways Limited was then asked to furnish transporta-

"The Aviation industry as a whole is thinking of large passenger and cargo aircraft for global air routes. Few realize the tremendous importance of the development of an air freighter to operate from combination airports to the hinterlands of the world."—W. L. Brintnell.

tion for isolated mining operations in central Manitoba and at the Pas, Manitoba, as well as in Northern Quebec.

The Fokker Universals served their purpose well through 1927 and 1928. The Fokker Company then developed a Super Universal with enclosed pilot's cockpit and greater performance.

In 1928 I became general manager of this company, and in 1930 we were operating 36 aircraft. Mining operations require everything in the way of supplies that men need. We were

asked to transport all kinds of machinery, dynamite and food supplies. In addition to this, the airplane provided transportation to hospitals for those who had been critically injured or who were too ill to be treated at the various camps.

DURING 1929 the activities of this company spread all across Canada. The Mackenzie River water system is one of the world's greatest rivers. The trading posts along this river, prior to 1929, had a mail service by boat in the summer and only one mail

service by dog team in the winter. This tremendous country, the area of which is almost as large as the whole of Europe, was to me a great challenge.

We started an air service here in February, 1929. Prior to this, fur trading companies would make their purchases of furs from the Indians in the winter, sending their fur out in the summer. It was then sold to various buyers. However, there is no demand for fur in the summer, and consequently the price was less than the price of fur in the winter.

On the first trip to Aklavik we brought out a plane load of fur. The trading company immediately sold it and netted \$30,000 more than would have been received from the price of fur in the following summer.

Here was a vast country, extremely rich in natural resources awaiting the advent of the airplane. Prior to this, prospectors had tried to search for minerals. The canoe trip down river in the spring was so arduous that there was little time to prospect if they wanted to get out again before freeze-up. The country was the same in development as it had been for hundreds of years previously, except

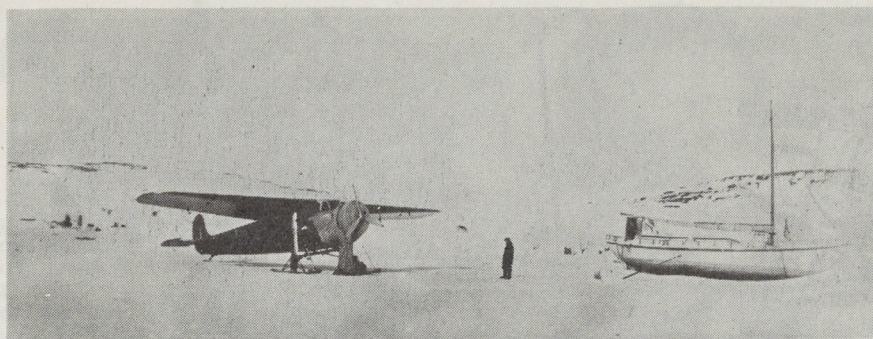


●  
Easy does it!  
Cargo being  
loaded aboard  
ship.  
●



# The PLANESMAN

AIRCRAFT REPAIR LTD. EDMONTON ALBERTA CANADA



Fokker Super Universal at Wilmot Island, North of Canada's Arctic Coast.

for the small trading posts along the Mackenzie River.

In August, 1929, I flew to Great Bear Lake and took along a mining friend of mine, Gilbert Labine. We made the first complete trips around this lake, which compares favorably in size with Lake Superior. As a result of that trip, Mr. Labine staked one of the world's greatest deposits of radium.

The location was right on the Arctic Circle, and the development of this radium mine could not have been accomplished without air freighters. Again, as had been done in other parts of Canada, the heavy mining machinery and supplies were transported down the Mackenzie River and over Great Bear Lake by boat. However, all of the fresh food and emergency supplies were transported by air, a distance of 2,400 miles round trip from Edmonton.

**T**O THE average person it would have seemed economically impossible to bring the mine into production in view of the location. However, the pitchblende deposits were very rich, so the expense was justified. Engineers at this mine concentrated the ore and these concentrates were all flown out to the railhead. They were then shipped by rail to a radium refinery.

The Fokker Super Universals and Fairchild's did not possess sufficient pay load and cruising range for the tremendous distances encountered in this country, so we searched for aircraft with a greater ratio of pay load to weight empty.

Multi-engined airplanes were not desirable because aircraft only operated during daylight, and with constant water below a stoppage of an engine was not serious and only meant a slight delay. However, with more reliable engines, forced landings due

to engine failures were indeed very rare, and up until a very short time ago the record for safety was unequalled anywhere, as not one passenger was injured or killed during all this time.

The aircraft we selected then was a Bellanca Aircruiser, powered with F Cyclone engine of 875 h.p. which weighed 6,100 pounds empty and had a 5,900 pounds disposable. This ratio is very good, even for aircraft today. The operation of several planes of this type made possible carrying 3,500 pounds of radium concentrates from the radium mine of the railhead.

The aircraft had a reasonably good cruising speed and the high pay load decreased the cost of operation to such an extent that the prices charged were acceptable and possible for the mining company, and our airline profited and made money without any form of Government subsidy, solely on the revenue derived from passengers and express.

The airlines in northern Canada by this time were equipped with a more modern version of the air freighter, as exemplified by the Norseman and the Fairchild 82. Both are manufactured in Montreal and powered with 600 h.p. Wasp H Engines, providing

increased cruising speed, range and payload, and being adaptable to wheels, pontoons and skis.

**A**IR freighting operations increased all across Canada from some centres on railways to outlying districts to such an extent that in 1938 26,250,000 pounds of freight were carried. This poundage considerably exceeded that carried in the United States during the corresponding period.

New mining areas were opened up and with continued expansion large communities were developed and in many instances in northern Ontario and Quebec railway and road transportation resulted. Thus, the air freighter was the means of opening up new country, creating new wealth and making productive jobs for more people.

During the period of 1933 to 1939 many unusual air freighting operations were carried out. Numerous trips were made by aircraft to isolated areas with medicine, food and clothing for small bands of Indians who were being decimated by an influenza epidemic. Aircraft would land on skis in out of the way places where no aircraft had ever landed before. This humanitarian aspect of air freighting has saved the lives of countless hundreds in northern Canada.

In January, 1935, one of the Hudson Bay Company boats was frozen in on the Arctic Coast at Lettie Harbor. No aircraft had ever been in there before. One of our planes flew in and brought out the entire crew.

Flights such as this were made over country which was not mapped and due to the inadequate weather reports and the tremendous amount of magnetic deviation, navigation had to be perfect.

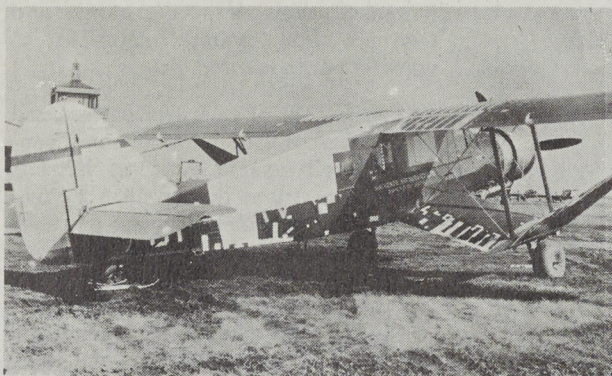


First Fokker Universal purchased by Western Canada Airways.



# The PLANESMAN

AIRCRAFT REPAIR LTD. EDMONTON ALBERTA CANADA



Bellanca Aircruiser salvaged in two-month operation at Athabasca flies to Edmonton non-stop.



First load of radium concentrates flown out 900 miles from radium mine shown at Fort McMurray.

In April, 1935, after the radium company commenced operation of its mill at Great Bear Lake, the flying company was requested to bring radium concentrates out to the railhead. This was the first time that this precious metal had been transported by air in Canada. The round trip was 1,800 miles and the aircraft carried 3,500 pounds of concentrates.

CANOES were transported frequently by air to an outlying district for the use of prospectors. This is an approved practice by the Canadian Department of Transport. However, the pilot is well advised to go only on a good day as turbulent weather will make any aircraft with such a load difficult to handle.

Pontoons belonging to aircraft marooned in some part of Canada for the wintertime, have been flown as far as 900 miles lashed to the struts of a ski equipped plane, so that the marooned aircraft would be able to commence flying as soon as open water came.

Mines and power projects have been developed and put into operation through the use of air freighters. The last outstanding example of this was in the development of the largest water power project in North America at Shipshaw, Quebec. Air freighters on skis flew in 4,000 tons of equipment, supplies, men and live animals.

The development of this power project was one of the contributing factors in making greater supplies of aluminum available to give us our present air superiority.

THE average cost of operating a medium type air freighter such as

a Noorduyn Norseman is .03 per pound mile. The cost of operating a Bellanca aircruiser, which carries twice the payload, is .02 per pound mile. These costs are higher than they should be due to the fact that aircraft cost 40% more in Canada than they do in the United States and gasoline is at least 50% more expensive.

By using an up-to-date air freighter with the proper engine, these costs can be reduced to such an extent that all the population of that particular undeveloped area could afford to use the airlines freely.

It has been proven over a period of time that the use of air freighters is definitely cheaper, taking all things

into consideration, than by means of canoe in the summertime or dogteam in the winter time. Thus, the entire economy in northern Canada has been changed by the use of the air freighter.

One can usually get a good meal at any mining camp, regardless of how far it is away from civilization, with ample fresh vegetables and fruits, all of which are brought in by air.

Every trader and Indian had dogteams which were expensive to buy and keep. As the use of air freighters became more prevalent the dogteam gradually began to disappear. Today one finds dogteams in use only by those trappers who have trap lines in isolated areas, but the dogteams, sup-

(Continued on Page 10)



Noorduyn Norsemen and Fairchild 82s pictured at Fort McMurray seaplane base, 300 miles north of Edmonton.

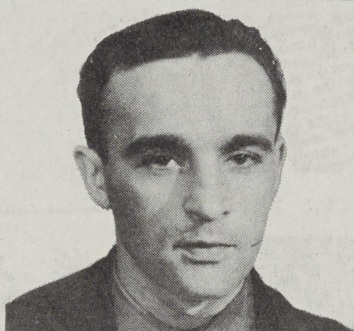


# The PLANESMAN PEOPLE

AIRCRAFT REPAIR LTD. EDMONTON ALBERTA

## Introducing~

*Geo S Taylor*  
GEORGE S. TAYLOR



... the Assistant Plant Superintendent, who was born in Colinton, Alberta, something like 29½ years ago, and who has somehow been able to remain single to this day. He has been in the aviation game since leaving Westmount High School here in 1931, first with Edmonton and

Northern Alberta Aero Club, then with Mackenzie Air Service, and now with Aircraft Repair Limited.

GEORGE wrote northern air history when he directed the salvaging and reconditioning of the famous CF-BKV that "dunked" through ice while taxiing. Together with Al Brown he was able to fly the Bellanca Air Cruiser out within two months.

BACK in the summer of '37 when those intrepid Russian flyers tried to find an air route over the North Pole and got themselves lost, Mr Taylor served as flight mechanic with the search aircraft, doing a nice little job of "souping" gasoline from 80 to 100 octane. Gents like Sir Hubert Wilkins were in on that search.

LEARNING to fly in 1932 and obtaining his private pilot's license he started in as mechanic with M.A.S., moving up to flight engineer in '34 and to charge over flight maintenance in '40 and still up to repair shop supervisor in '41, before shifting to A.R.L. in February, 1942. En route upwards he picked up his Air Engineer's A, C and B "Tickets." To gain additional experience he's been on inspection trips to the big aircraft plants in the Eastern States.

FOR recreation he likes shooting... ducks... or anything he runs across. He tried skiing... once. And for reading he laps up those northwest adventure stories.

HE attends Westmount Presbyterian Church.

GEORGE lives with his parents, Mr. and Mrs. S. H. Taylor. His father, by the way, is a charge hand in our Woodwork Department. Younger brother Alfred is also a charge hand here, in Department 71. Another brother, Harry, is a steam engineer at Vancouver. Mrs. Ralph Marshall, whose husband tends to the maintenance here for Canadian Pacific Airlines, and Mrs. A. Rowbridge, both of Edmonton, are his sisters.

INCIDENTALLY, about that "S" in his initials... you really want to know... well... mmm... o.k. George, you win... we won't tell them.

## Trouble by the Ton

By the middle of October Canada produced its millionth ton of war chemicals and explosives. About three-quarters of the total comprises chemicals required for the manufacture of military high explosives, tracer bullet compounds and smoke screen material, as well as for use by other war industries.

A million tons of chemicals and explosives may seem a lot, but here are a few figures to show how quickly it can be used up by our fighting men. Out of one ton of TNT we could fill: almost three torpedoes, or seven depth charges, or four 1,000 pound aerial bombs, or two thousand 25-pound shells, and it would take almost twice as much cordite to hurl those shells onto enemy targets. Approximately 250 anti-tank mines would use up a ton of TNT, whereas the same quantity of amatol, a mixture of TNT and ammonium nitrate, would load about sixty howitzer shells which would require almost a similar amount of cordite to speed them on their way. A .303 rifle or machine-gun cartridge is loaded with about one-tenth of an ounce of smokeless powder as the propellant for the bullet.

Munitions and Supply.

## Special Awards to Aircraft

Aircraft workers in Canada have saved the nation over \$200,000 cash in direct production costs by suggestions made since the first of the year, and perhaps millions indirectly. One Canadian worker made a simple technical suggestion which saves 5,625 man hours on every one hundreds aircraft.

## As Cowan Sees 'Em



*Al Spence*  
SUPERVISOR of STORES



AL SPENT HIS  
SCHOOL DAYS  
IN ONTARIO

WHERE HE PLAYED SOME  
CLASSY  
HOCKEY



EXCESS ENERGY  
NOW DEVOTED TO  
HUNTING AND  
FISHING



# The PLANESMAN

AIRCRAFT REPAIR LTD. EDMONTON ALBERTA CANADA

IN the

NEWS

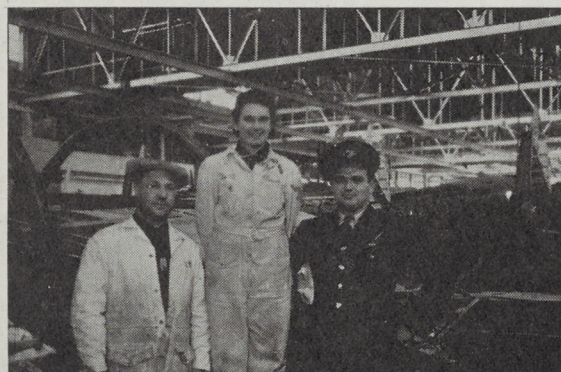
DURING the last short while many of our co-workers have enlisted in the various active services. The following list will not be complete:



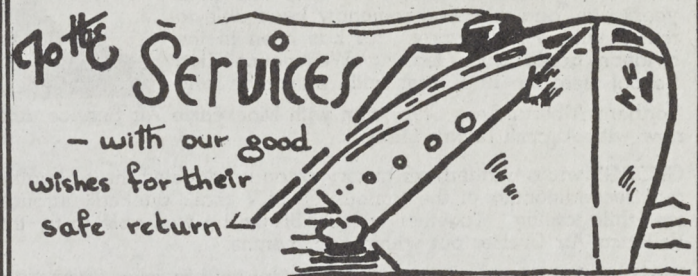
MART KENNEY'S best band in the land put on their Coca Cola Victory Parade broadcast over the CBC network from our "No. 4." Ed. DONNELLY, Dismantling, is shown leading the "Spotlight Band." It was fun.



BIG EVENT for the kiddies was our "Christmas Tree," with lots of eats, lots of laughs, and . . . lots of kids. Santa came in by plane to climax the entertainment. It'll have to be an annual affair now.



ASSOCIATES in Canada's war effort compared notes when F/O Alexander "Happy" HOLMES, D.F.C., visited the plant. The hero of 33 operational trips over occupied Europe is shown above with Bill MITCHELL and Maude DELL, Woodworking.



## NAVY—

Harry J. BARR, Dismantling  
Kenneth L. BEECROFT, Dope  
Robert N. BLADON, Inspection  
Lester M. FAULKNER, Maintenance  
Alberta R. GLAUDE, A. R. Stores  
Eugene GREGORY, Sheet Metal  
Donald B. KENNEDY, Repair  
Reuben KOSSMAN, Machine Shop  
Donald B. MORRISON, Receiving  
Rose A. POTVIN, A. R. Stores  
Robert M. SIMPSON, Sheet Metal  
Harold G. TOWNSLEY, Repair  
Gladys V. TRAVERS, Sheet Metal

## ARMY—

Cecil C. ANDERSON, Fabric  
Henry E. BRUYERE, Repair  
Gerard J. HARNOIS, Woodwork  
James H. JAMIESON, Cleaning  
Frank JOSEPH, Repair  
George B. LUCKWELL, Engine Room  
Victor B. MILLS, Hydraulics  
Leo NICHOLS, Engine Room  
Gladys R. OSGOOD, Sheet Metal  
James D. ROBERTS, Fabric  
Franklin R. RUMRILL, Woodwork  
Donald A. SCHELL, Fabric  
Robert A. THIEDE, Engine Room  
George VAUGHAN, Propellers

## AIR FORCE—

Daniel CUNNINGHAM, Repair  
Dan S. EDMONTON, Repair  
Stanley ELMQUIST, Repair  
Viola M. GAUDRY, Dismantling  
Clarence L. INGRAM, Repair  
Irma A. SPENCE, Radiators  
Ralph A. WARD, Repair  
Mary F. WOROBEK, Dope

\* \* \*

They're fighting harder than ever  
—are you buying more War Savings  
Certificates?

\* \* \*

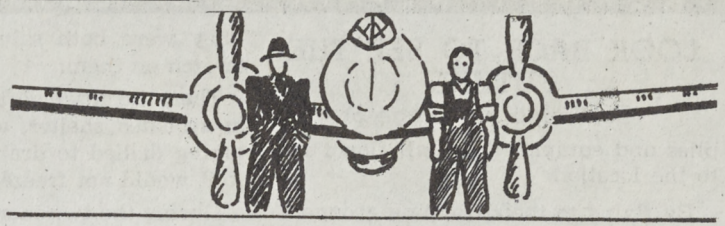


# The PLANESMAN PRODUCTION

## AIRCRAFT REPAIR LTD. EDMONTON

### CLASS "B" AWARDS (Continued)

- **G. J. PHILLIPS**—Improved method for checking aircraft vacuum system—\$4.
- **K. W. HENSHALL**—Precautions to be taken in shellacing tapes securing Bowden controls to prevent fouling control—\$4.
- **R. S. OLDRING**—Grommet set for counter-sunk type Dzus fasteners for use in crowded locations—\$4.
- **J. A. HAMMOND**—Code for determination of R.A.F. serial numbers on Cheetah X engines—\$4.
- **E. DARCH**—Color code to identify AN & A.G.S. screws and nuts of similar threads and sizes—\$2.



## JOINT PRODUCTION COMMITTEE

### SUPPLEMENTARY AWARDS

- **H. M. HEARD**—Access door in Oxford control pedestal for hydraulic pressure adjustment—\$55.
- **W. M. CONOLY**—Use of scrap pysralin in making up Anson emergency exit panel—\$10.
- **L. W. LILIEDAHL**—Combination inside-outside reamer used in electric drill for removing burrs from ends of steel tubing left by cut-off wheel—\$4.

### SPECIAL

An award of \$25 went to R. Preus of Welding, who was the elected representative to the Employees' Suggestion Committee from that department. This award is made to the elected representative from the department in the plant having the highest percentage of accepted suggestions for the year.



A number of skin hazards are incident to the manufacture of aeroplanes. While it has been suggested that some skin trouble in this industry is due to the handling of duraluminum, most authorities agree there could be no reaction between skin and duraluminum or its constituents.

THERE is some danger in inhaling chromic acid from anodizing baths. It is also pointed out that chrome ulcers and dermatitis may occur in the plating department of aircraft works.

SOLVENTS used in degreasing parts are also a possible source of skin infection. Hydrocarbon solvents affect the skin and may produce a chronic dermatitis or eczema. This danger is also present where workers clean their skin by the use of such solvents.

ALKALIS and solvents used in degreasing and cleaning parts before electro-plating baths may be regarded as primary irritants or sensitizers.

CUTTING oils used in lathe operations may give rise to oil folliculitis.

THESE oils may contain small amounts of free sulphuric acid or some alkaline soap solution. Frequently metal particles accumulate in the cutting oils and result in skin abrasion.

PAINT solvents and dopes which are employed in the painting department are known to give rise to dermatitis in the case of sensitive persons. Thinners being fat solvents are especially dangerous.

FINAL attention should be drawn to the technical hazard of radium poisoning which may be present in the operation of painting luminous dials.


HERE are more winners of awards under our Employee Suggestion Plan. Class "A" Awards are based on the percentage savings on investment cost and represent tangible savings in labor or materials. Class "B" Awards are for intangible savings resulting from quality and safety improvements. Supplementary Awards were paid to employees whose suggestions have brought about savings in excess of what had originally been estimated.

### CLASS "A" AWARDS

- **P. MacRITCHIE**—Improved wrench for Wasp crankshaft through bolt—\$80.
- **C. D. REBUS**—Hand tool for twisting locking wire, made by brazing a Dzus fastener on the end of a screw driver—\$34.50.
- **L. BINNIE**—Modification of Anson engine to mount attachment bolts to facilitate replacement of these bolts—\$8.
- **A. McTAGGART**—Apparatus for removing broken studs, drills or taps from castings, using an electric arc and compressed air—\$8.
- **E. JACOBS**—Method for removing broken studs or valve inserts from aluminum alloy or iron castings using oxy-acetylene cutting torch—\$8.
- **W. J. BARR**—Hand tool made from sheet steel, for installing Anson heavy series bomb door springs—\$4.

### CLASS "B" AWARDS

- **H. DETWILLER**—Installation of clip to prevent chafing and loss of transparency of Oxford cockpit sliding windows—\$8.
- **P. PODHANIUK**—Oil Dilution solenoid valves; replace tapered metal seat with neoprene washer—\$8.
- **E. KRAHULEC**—Extra supply tank for hydraulic fluid used while filling and bleeding Norseman brakes—\$8.
- **G. S. REID**—Jig for end radiusing round bar stock in the making of saddle washers—\$8.
- **A. H. BLACKBURN**—Improvements to plywood scarfing machine—\$8.
- **J. A. BELL**—Improvements to plywood scarfing machine—\$8.
- **F. N. ARNOLD**—Procedure to reduce adjustments required on tach generators during aircraft final testing—\$4.
- **K. L. GOULD**—Improvement to mounting for Oxford fuel shut-off cocks—\$4.

FOR YOU  NO CHARGE

**MOVIES**  
CAFETERIA  
★ "Theatre" ★

The **SECOND** and **FOURTH** Wednesdays  
of each month

—FILMS—

from the Industrial Circuit of the National Film Board

Night Shift at 3:20 p.m. — Day Shift at 4:05 p.m.



# The PLANESMAN

AIRCRAFT REPAIR LTD. EDMONTON ALBERTA CANADA

## LOOK BACK TO SEE THE FUTURE

(Continued from Page 6)

plies and equipment are all flown in to the location.

By flying to their trapping grounds trappers are able to arrive there with the maximum amount of food and supplies. Consequently they have a greater amount of productive time to devote to trapping. By going in with dogteams, much of the food would be used on the trip, and it would be necessary to come out to a trading post again in mid-season for a fresh load of supplies. Almost without exception, all white trappers and many Indians, fly in to their trapping grounds.

**I**N OPERATING all types of air freighters over northern Canada difficult salvage operations are often necessary. The maintenance of aircraft on this type of operation must be even more exacting than that on airlines such as you have here in the United States, by reason of the fact that if anything goes wrong with the aircraft away from civilization, the crew is forced to fix it.

If it is beyond their capabilities it is necessary to fly in motors, men and supplies sufficient to make the repair. This is very costly.

One of the most outstanding salvage jobs ever completed involved a Belanca Air cruiser which landed on the ice of Lake Athabasca and while taxiing in to the shoreline struck a weak spot and went through the ice. The aircraft sank until only the tailplane, fin and rudder were exposed.

It was necessary to build cabins right on the ice to house the personnel. We had a crew of woodcutters busy cutting wood and completing shelters of various kinds. We used over 75 cords of wood during the two months it took to salvage the plane.

It was necessary to chisel the ice away from the under side of the wing and wait until the ice froze thicker so that we could gradually expose more of the wing. The wings weighed several tons apiece and had to be lifted very carefully with planking and by hydraulic jacks so that the spars would not receive any undue strain.

It took ten days with fires going 24 hours a day, to thaw out each wing.

They were both salvaged without a scratch on them.

Then the fuselage had to be raised in a heated shelter, and the fuselage tubing drilled to drain out the water so it would not freeze and crack.

During the two months time it took to accomplish this job the weather ranged from 20 to 55 degrees below zero, making working conditions very difficult.

The original engine had been submerged in the water all this time, and after a thorough drying out and the insertion of a new set of sparkplugs, the aircraft was flown non-stop 500 miles to Edmonton.

This whole operation was completed 100 miles away from any form of habitation. We set up a portable radio station so that constant communication could be maintained with head office 500 miles away, and urgent supplies could be dropped off daily by planes on scheduled mail flights.

**T**HE designer of air freighters requires considerable knowledge of the operating conditions, because this type of plane must be adaptable. It should be able to fly on either wheels, pontoons or skis.

It should be so designed that there is the minimum amount of maintenance necessary on the aircraft itself. The air freighter must have a reasonable amount of speed. It must have excellent take-off and landing characteristics, a long cruising range and a large payload.

In northern Canada there is no necessity for multi-engine aircraft as lakes and rivers are provided by nature in the event that forced landings are necessary. However, with modern

aircraft engines, forced landing are practically non-existent.

The aircraft must have large doors to provide loading facilities for the most bulky pieces of machinery. The floor of the cabin must be especially reinforced to carry concentrated loads of heavy pieces of equipment.

Those of us who have operated aircraft in northern Canada have had a great deal of experience in the winterization of aircraft so that they can fly in extremely cold temperatures. Aircraft should have sufficient control on the instrument panel to be able to fly in 120 deg. above or 70 deg. below zero.

I think we were the first people in Canada to incorporate these ideas in aircraft before they came from the factories.

We had great difficulty in convincing the engineering departments to incorporate the ideas we had proved out over the years. We did find on using the aircraft that they functioned perfectly either summer or winter.

I believe the air freighter which is adaptable for use in northern Canada could be used in any other part of the world. In many undeveloped countries there are lakes and rivers on which operations could be carried out until such time as airports could be built.

Many people believe that military aircraft will be converted to commercial air freighters after the war, but the cost of operating these aircraft will be prohibitive, besides many of them would not be convertible to floats and skis.

(Continued on Page 12)

Eskimo  
Spring  
Styles





The

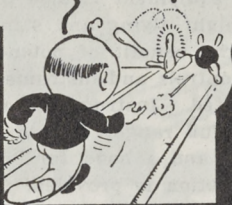
## PLANESMAN

## PLAY

AIRCRAFT REPAIR LTD. EDMONTON ALBERT



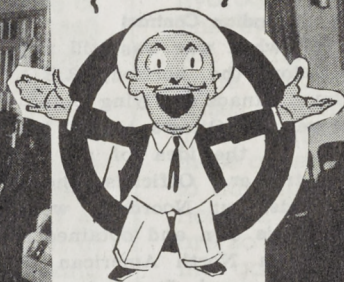
DANCE every Saturday in the Cafeteria has brought fun and frolic to thousands... and supported many other plant doings.



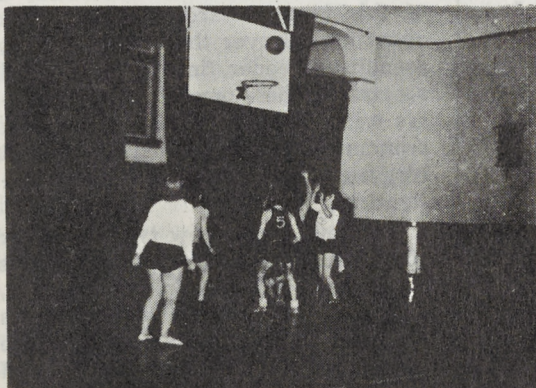
BOWLING has attracted most participants of winter season sport activities... 54 teams are entered in our inter-league.



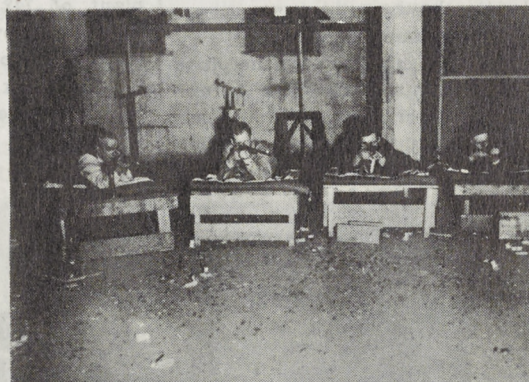
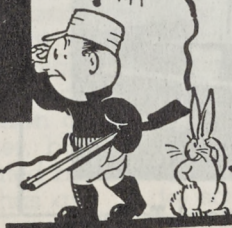
GLEE Club has now disbanded temporarily, but did have an active season... carols, hospital entertaining, music hours. Ah!



GIRLS' Clubs meet Tuesday at the local YWCA for a varied and interesting program... they initiated hostessing at dances.



BASKETBALL went over big... girls fared well in a tough league, while men topped City "B" League title and a smart trophy.



RIFLE Club with an ever-increasing membership and no place to shoot is in a bit of a predicament. Any solutions?



# The PLANESMAN

AIRCRAFT REPAIR LTD. EDMONTON ALBERTA CANADA

A FLASHING, swift, yellow plane, with wheels folded neatly under its chin can swoop down over any street or country lane in Canada and children will look up from their play to exclaim, "Boy, there goes a Harvard."

## "MADE IN CANADA" PLANES

*That Wage War  
In the Skies*

Now a familiar household word in any part of the country, the name Harvard three years ago was associated in the minds of most only with that of a great educational centre. Now everyone knows the Harvard as the AT-16 advanced trainer plane of Canada's vast air training scheme. Those who know it best of all are the present day heroes of the R.C.A.F. and R.A.F. who learned from it how to twist, turn, and outfly the best of the Axis airmen.

Although the plane is not essentially designed as a fighting craft it has played a tremendous role in Canada's war effort, and 9,000 Canadians are working, day and night to make sure that their brothers of the air forces get the best possible plane to complete their preparations for action.

An all-metal two-seater, low-wing monoplane, the Harvard spreads her wings over a span of 42 feet. Her single 550-horsepower Pratt and Whitney Wasp engine can lift the craft's 5,340 pounds of gross weight swiftly from the ground and send it roaring through the air, obedient to the slightest control, at a speed in excess of 200 miles per hour.

### Armament Provided

Armament provision for the plane consists of a machine gun in one wing, a camera gun in the other, and a light type practice bomb rack.

Full equipment is also provided for night flying and signaling. For the benefit of potential pilots, all controls and instruments are duplicated. Instruments also include the full range required for blind flying, and a hood for blind flying instruction is provided.

### Construction Described

Painted a bright yellow which flashes brilliantly in the sunlight, the plane is of metal construction throughout. The front, or cockpit section of the fuselage and the detachable engine mount, are of welded steel construction, covered with detachable metal side panels and cowling. The rear part of the fuselage and the wing, tail, and control surfaces and flaps, are of metal "skinstresse" build, with the exception of the ailerons, rudders, and elevators, which are fabric covered. A special feature of the Canadian-built model is the extensive system of cockpit heating, for cold climate operations.

### Canadian Contract

In 1937, when war was still two years below the horizon, R.B.C. Noorduyn, Canada's "Flying Dutchman," went to Ottawa to sell the R.C.A.F. on the idea of an advanced trainer. Officials shook their heads, but Noorduyn went ahead on his own and obtained a license from North American to make the Harvard. It wasn't until January 1940, however, that he got his first contract and the trainers began to roll from his shop. The rest of the story of the Harvard is familiar to all Canadians. The government now needed trainers and needed them fast. Canadian workmen produced them fast. The plant of 142 men on January 1, 1939, had grown to an organization of 8,710 persons by January 1, 1943 and the sleek yellow trainers began to swoop over Canadian fields by thousands.

## LOOK BACK TO THE FUTURE

(Continued from Page 10)

WITH the tremendous amount of knowledge now available in the art of building aircraft, provided the right power plant was available, the convertible type air freighter could be built very cheaply. I believe the cost of operation of this type of plane must come down considerably from its present price to enable people living in isolated districts to take advantage of the passenger and express fares.

One of the greatest factors in the development of any pioneer industry is the personnel problem. Men who work in these areas receive good wages and excellent food but in addition to this they must have home life and be accessible to civilization. This can all be accomplished by an efficient air freighter with low operating costs.

There are still great portions of the world which have not been scratched in the development of their natural resources. This is particularly true of all northern Canada as we actually have only a thin strip of developed country along the southern part of the Canadian-United States boundary.

We know that the northern part of our country is extremely rich in minerals and natural resources of all kinds.

Thus, fleets of efficient air freighters will make possible the development of natural resources to an extent we have never dreamed before. The accelerated development of these natural resources will help materially in solving the postwar employment problem.

I believe much thought should be devoted to the design and construction of this type of aircraft because its operation all over the world will act as natural feeder lines to the global air routes. These new type air freighters will materially help to solve the economic problems of the better world for which the United Nations are fighting.

I believe that a new type of power plant must be designed and built as the present-day gasoline type engine, although effective for war work, is entirely too expensive for peacetime operations. This new engine should burn fuel oil and I believe, if properly designed, the cost can be brought down to the ideal of \$1 per pound per horsepower basis.



NORTH AMERICAN HARVARD Advanced Trainer

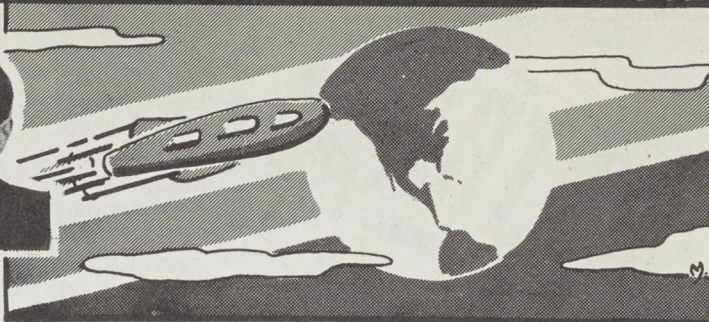


# The PLANESMAN

AIRCRAFT REPAIR LTD. EDMONTON ALBERTA CANADA

## About this JET PROPULSION

—WAY TO MAKE PLANES FLY—  
As seen by G. C. Christie, Chief Engineer



THE recent announcement of the Bell jet-propelled fighter plane, developed from the original jet engine designed by Group Captain Frank Whittle, R.A.F., has catapulted the too-ardent press-agents of the "world in which we are to live" into frenzies of predictions that the aircraft industry will be revolutionized overnight. Any such development is the result of long and arduous research, and though it is not to be discounted it is well to understand some of its history, its principles, and its problems before accepting at face-value the glib superlatives used in its description.

THE idea of jet or rocket propulsion is not new. As early as 1645, rocket propelled missiles aided in the capture of Phillipsburg. In the Napoleonic Wars General Congreve used rockets in the siege of Boulogne in 1806, and Copenhagen in 1807. In the latter engagement 120,000 rockets



were used, mainly missiles weighing 32 lbs., which contained explosive charges of from 10 to 20 lbs. By 1840 these had been developed to a point where they had an effective range of from 2100 to 3700 yards. This development may well have continued had it not been

for the advent of rifled guns, which gave birth to modern artillery. Though rockets were forgotten in a military sense they continued in use for life-saving apparatus, and are still used for this purpose, and everyone is familiar with fireworks rockets; which work on the same basic principles as Group Captain Whittle's jet engine.

IN 1919, Professor Goddard of Clark College advanced the idea of using rockets for attaining great altitudes and velocities and his experiments marked the beginning of modern interest in reaction power. Others followed, Goldau, Campini and Whittle. Campini's design first flew in 1941, Whittle's a few months earlier in the same year. Successful runs of Whittle's engine had been made in 1937, some four years earlier. Briefly that is the history, but let us consider the principles upon which these developments are based.

### Based on Simple Principle

THE basic principle of jet propulsion is extremely simple. Almost everyone has blown up a toy balloon and then released it, to watch its erratic but rapid flight. That is a rough form of jet propulsion. Basically, then, jet propulsion provides power from a stream of gas being ejected from a container through a nozzle. The popular idea seems to be held that the power is derived from this stream by reason of its pushing upon the air outside the container, but such is not the case. The principle is that stated by Newton's third law of motion, "Every action has an

equal and opposite reaction." Now, in the case of the moving stream of gas, since the gas is in motion it is obvious that a force is acting on it, since it possesses mass. Therefore, from the law stated above, there is an equal force acting in the opposite direction. It is also obvious that the higher the velocity of the gas, the greater the force required and therefore the greater the reaction.

THE force required for the expulsion of the gases is provided in all cases by heat. The earlier types of rockets or jets, and some of the modern ones, employed solid fuel such as gun-powder, which contain their own oxygen. Professor Goddard used gasoline and liquid oxygen, and the more modern engines use some form of liquid fuel, gasoline, alcohol, liquid hydrogen, or kerosene, and use atmospheric oxygen. The cycles in all cases are the same. The fuel,

on burning produces large volumes of hot gases under pressure in a container and these gases are ejected to atmosphere through nozzles. These nozzles are so constructed that the gas expands and cools and this loss of heat energy is compensated by a large increase in gas velocity, which in turn produces thrust.



### Efficiency Considered

SINCE in any mechanism of this kind the final criterion is efficiency, let us consider for a moment what the efficiency of this new system is. Consideration must be given to two different efficiencies, first "internal" or thermal efficiency, and secondly "external" or ballistic efficiency. For some forms of rockets the first is very low, about 2%, but for larger liquid fuel rockets it is approximately 60%. This high efficiency as compared to the internal combustion engine, can be traced to three factors, namely, higher temperatures, lack of moving parts, and low friction in the gas stream. The great problem arises in considering the external efficiency. If the rocket is nailed down this is simply zero, whereas if the rocket is moving at the same speed as the exhaust the efficiency is 100%. Since exhaust velocities for the larger engines are around 2000 meters per second, it would seem that external efficiency and therefore overall efficiency would be very low unless aircraft speeds around 800 m.p.h. were considered. It can to some degree be alleviated by increasing the



# The PLANESMAN

AIRCRAFT REPAIR LTD. EDMONTON ALBERTA CANADA



RIGHT off, we'd better mention the highlight of the Christmas season as far as the Cafeteria Staff is concerned . . . and that was the presentation of pen and pencil sets to

Messrs. HAIG and MOOREHOUSE, the "boss men" of the obliging eat-providers.

It was a nice gesture from nice ladies to nice fellows. And the girls got a big kick out of it!

BEHIND the voices that chat to you over the Cafeteria public address system each lunch period are such notables from Work and Parts Scheduling as Johnny HARROLD, Roy INGRAM, Thornton GROSE, and Joe EVANS. They do the news-records-announcement routine gratis in their regular eating period. Thanks, gang.

APOLOGIES, belated as they are, go to those of you who found items in the last issue that were not as you figured they should be. Those things happen, you know.

OUR good friend F. W. BAGNELL wishes it known that you fellows from the Assembly Floor and roundabouts that wish to read his book, "Not Mentioned in Dispatches," may find it around "940-91 B146" in the local Public Library.

HENRY STROPPEL could well be our "man of the year" (during the later part of '43, at any rate) as he was aboard "H.M.S. Sheffield" which played an important part in the sinking of the "Scharnhorst" back on Dec. 26th. Reports are that Henry is as proud as can be with his ship and its doings. Incidentally, he sends along his best regards to everyone here at the plant, and wishes us all a prosperous 1944. The best of good luck to you, Henry.

GETTING back to Christmas and things, we shouldn't pass up a few comments received regarding the Kiddies' Xmas Tree. The Glass Section of Dept. 41 sent along a card with thanks to Special Services and the Management of Aircraft Repair for the affair.

Mrs. H. WALKER dropped a note to say "thank you for the good time the children had . . . it was very nice of you and your staff." Parents of Dept. 71 and 48 joined to pass along "thank you for your grand effort in entertaining the children . . . by all accounts it was a big success, and enjoyed by all." And you can take it from Maimee BOYLE, Inspection, that her children had "the best time yet." ALL who put the show over should treat these comments as personal "thank you's."



Job No 1250

RATS FOR STRAIGHTENING TUBING

## JET PROPULSION (from Page 13)

mass of the exhaust stream by adding air to reduce velocity but this tends to reduce overall efficiency and increase complication of construction. It would seem therefore that the jet can compete with the present system only at high altitudes, in which the propeller loses its efficiency rapidly, or at high speeds at which the propeller loses efficiency due to high rotative speed.

ONE possibility does exist which is being considered seriously. That is the combination of the helicopter and the jet propulsion idea. The idea here is to drive the helicopter rotor blades by jets on the blades themselves, in much the same manner as a lawn-sprinkler. The major draw-back is the mechanical complication involved in distributing the gases to the individual blade jets. In principal the idea is sound, since even when hovering the rotor blades are moving at velocities which make the jet efficient.

### Idea Not Entirely New

THE idea is not entirely a modern one. The first helicopter, which met with limited success, was designed and built by Phillips and was completed in 1842! It attained some success, reaching considerable altitude and flying approximately half a mile. Phillips used jet-propelled rotors driven by steam.

DR. SANGER, a German experimenter, suggested the idea of initial jet power to reach high speeds and altitude, and the conversion of this condition into range as the aircraft lost speed and altitude after power was lost. Dr. Sanger was of the opinion that this method would provide approximately the same fuel consumption as a normal aircraft but would allow higher velocities and hence provide time savings of considerable magnitude.

THE principle underlying the latest development, the Whittle engine has not been made public to a sufficient degree to allow any clear ideas to be formed of its possibilities, but it has been announced that its fuel consumption is very high. Whether sufficient speed is attained to offset this drawback is not known, and this would have to be considered as a final criterion.

IT becomes obvious then that jet-propulsion is a long way from universal use, but we would not be too optimistic in believing that its drawbacks will be overcome and that it will someday take its place as an important type of powerplant. This may take five years, it may take ten—but the principles are sound. It will come.

CHANGES in the direction of our "off-shift" activity have taken place. Bert BLADON, who deserves more than a bouquet for his efforts, found a chap called Adrian MAGRATH, with a little more time, to take over the Presidency of the Entertainment Association. New members of said guiding group are Dot MOORE, Work Orders, as Vice-President, and Johnny HARROLD, Scheduling, as Treasurer. Prop-Shop ROBINSON now manages the band. Our ace support, Pete PULLISHY, also departed for Eastern parts, leaving big gaps in several organizations that'll be tough to fill.



# This little Pig . . .



A little pig  
only two inches  
from nose to tail.  
Carved in wood.  
Mary gave him to me  
before I went  
to England  
Long—long ago  
the day she and I—  
bless her—  
but never mind.  
He's lived here  
in my pocket  
ever since.  
Over Germany . . .  
over France . . .  
over Italy . . .  
Over Tunis . . .  
my little pig  
goes with me.  
He mounts the sky  
like a bird.  
He rides the storm  
without a murmur.  
He dodges the flak  
like a half-back  
with me . . .  
A—ah . . .  
here comes a Hun . . .  
there goes a Hun  
where all bad Huns  
should go.  
Mary—lovely Mary—  
your little pig  
has done it  
Again.

Our boys who fight the enemy carry  
our mascots and our affections with  
them wherever they go. But mascots  
and affections are not enough. We  
must support them also with work  
and sacrifice and SAVING. Canada  
as a whole is doing just this and doing  
it magnificently. What about you?  
Could you spend less and save more?  
*You know the answer.*



# YOU'LL NEVER BE

*the man you  
could be...*

The man you could be has plenty of energy—he feels mighty good and full of pep. He's always ready for a good day's work and seldom misses a day on the job. There's a war to be won—and nothing less than his best is good enough.

But you'll never be the man you could be until you get busy eating the right foods, and eating them *regularly*. For it's *food* that makes the difference—the difference between being half alive and really alive. *Food* is your builder—*food* is your fuel. Start your own health program—follow Canada's Food Rules—for Canada *needs* you strong.

Now's the time to help yourself—now's the time to help Canada! *Be the man you could be*—and begin right now!

## EAT RIGHT



*the woman you  
could be...*

The woman you could be feels like a million in the morning—looks like a million, too! She tackles each day's work with zest—makes things hum, gets things done—and still has energy to burn,

But you'll never be the woman you could be until you eat the foods you should eat—eat them *daily*—and *enjoy* them. *Food* makes the difference. The difference between "getting by" and being 100% alive and well. The difference between second-best and best. And nothing less than your best is good enough today—Canada *needs* you strong!

Know the right foods—follow Canada's Food Rules—*be the woman you could be*—start right now!

## FEEL RIGHT

### CANADA'S FOOD RULES



**MILK**—Adults: one-half pint. Children: more than one pint. And some *cheese*.



**FRUITS**—One serving of tomatoes daily, or of a citrus fruit, or of tomato or citrus fruit juices, and one serving of other fruits, fresh, canned, or dried.



**VEGETABLES**—(In addition to potatoes, of which you need one serving daily)—Two servings daily of vegetables, preferably leafy green, or yellow, and frequently raw.



**CEREALS and BREADS**—One serving of a whole grain cereal and four to six slices of Canada-approved bread, brown or white.



**MEAT, FISH, EGGS, etc.**—One serving a day of meat, fish, or meat substitutes. Liver, heart, or kidney once a week. Eggs, at least three or four weekly.

PLUS OTHER FOODS YOU WISH . . .

# Canada Needs You Strong